

Quiz 2: Jan. 24, 2023.
Duration: 30 minutes.
Please, don't use pencils.

Student Name:..... Student ID:.....
Section:.....

This exam has 2 questions, for a total of 15 points.

1. Give the worst-case time complexity $T(n)$ of the following code fragments.

3 (a) 1: **for** $i = 1, [\log n]$ **do**
2: **for** $j = 1, [\log n]$ **do**
3: **for** $k = 1, [\log n]$ **do**
4: print "Hello!"
5: **end for**
6: **end for**
7: **end for**

3 (b) 1: **for** $i = 1, [\log n]$ **do**
2: **for** $j = 1, n$ **do**
3: **for** $k = 1, j$ **do**
4: print "Hello!"
5: **end for**
6: **end for**
7: **end for**

2. Use the master method to give tight asymptotic bounds for the following recurrences.

3 (a) $T(n) = 8T(n/8) + n$.

3 (b) $T(n) = 16T(n/4) + n^3$.

3 (c) $T(n) = 7T(n/2) + n^2$.